DEPARTMENT OF AGRICULTURE,
BRITISH GUIANA.

FOREWORD.

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FIELD EXPERIMENTS WITH SUGAR CANE, XIII.

THE VARIETY AND FERTILIZER POSITION OF THE SUGAR INDUSTRY, X.

REPORT ON THE SUGAR EXPERIMENT STATIONS FOR THE YEAR 1944.

THE "DAILY CHRONICLE," LTD., GEORGETOWN, DEMERARA,
1945.

Sugar Bulletin, No. 13.

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FOREWORD.

This bulletin is the thirteenth of the series and like its predecessors records the results of field experiments and related studies for the year under review—in this case 1944. The presentation is later than usual due to staff shortage and printing congestion following the great fire in Georgetown.

The period under review has been a most trying one for the industry as a whole and this has not been without effect on the progress of the experimental work in hand: labour shortage with increasing costs, shortage of fertilizers, adverse weather in the early part of the year, staff changes—all have contributed setbacks in varying degrees. Nevertheless the over-all position since the first of these bulletins was issued has shown a tremendous advance.

First, there has been a complete change over in the variety situation to which P.O.J. 2878, an early introduction by the Department, has made a great and undisputed contribution. This variety came at a time when the re-organisation of the breeding work at the Station was just beginning to take shape thus paving the way for the new and still higher yielding canes which are now beginning to replace it. In this and recent bulletins, the value of these new varieties, to which the blood of P.O.J. 2878 has contributed, is clearly shown.

The steady and persistent study of the fertilizer problem during all these years has yielded remarkable results and provided a basis for advice to the industry which it has readily accepted. The value of large increases in the dose of nitrogen has been an outstanding feature. New types of nitrogenous fertilizer have been studied but none has proved superior to the old and trusted forms, notably sulphate of ammonia. While results with phosphate and potash have not been consistent in all areas much information on their behaviour on the different soils of the cane belt has become available and forms the basis of advisory work pending further elucidation of their economic use. Similarly, lime and lime bearing materials have been the subject of investigation. The problem of phosphate fixation in our heavy clays continues to be a fundamental one of great importance which can only be solved by long range research. Likewise the role of organic matter and its relationship to the fertilizer problem as a whole is still to be tackled, although a start has been made in this direction in the field employing the Cameron-Williams method of utilizing organic material, trash, etc. (See Sugar Bulletin No. 11).

The industry is now embarking on mechanical tillage trials aimed at deeper working of the soil which may have a profound effect on every phase of soil management, including drainage and irrigation, flood-fallowing, fertilizer application and other cultural measures designed to improve economic yields per unit of land. While much of this projected work is of the utmost importance on heavy clays, amelioration of the troublesome pegassy soils which form some 25 per cent of the cane area is also receiving attention and, in this connection, the use of molasses both as amendment and fertilizer shows great possibilities. In all these developments the Station is playing its part and there is the fullest collaboration of all interested to ensure that these activities and operations are closely integrated.

While the work of the Station is largely concerned with field problems, experimental technique, etc., statistics bearing on the broader aspects of the industry have not been overlooked—not only in respect to the variety and fertilizer position generally, but in such matters as delays between burning and milling, labour requirements of the industry, and a number of related questions. Indeed reference to the bulletins and reports issued throughout the past decade or more will show that despite limited resources both in funds and staff and the unusual difficulties to be met with on the coastal belt, including floods and droughts, a substantial *dossier* of facts and figures has been built up in ready reference form for the use of administrators and estate staffs.

Work of this character is slow and tedious, results from research cannot be hurried, a problem solved today may open up another one tomorrow and so the work must continue if the industry, now entering a new phase of its existence, is to survive in a competitive world.

This is likely to be the last foreword which, in the course of my period of tenure in this Colony as Director of Agriculture, it will be my privilege to write. I cannot lay down the responsibility with which I have been charged without expressing to all those with whom I have been associated during these long and difficult years my heartfelt thanks for the earnest co-operation and kind consideration which has been extended to me at all times. To the staff of the Sugar Station I say 'Well done, carry on the good work.'

J. SYDNEY DASH,

Director of Agriculture.

FIELD EXPERIMENTS WITH SUGAR CANE, XIII.

BY

C. HOLMAN B. WILLIAMS, *Sugar Agronomist and Plant Breeder,*

AND

C. CAMERON, *Field Manager.*

INTRODUCTION.

This paper records the results of 42 variety and 46 manurial trials reaped during the calendar year 1944. The experiments were laid out to permit of the analysis of variance.

Table I shows that the total rainfall at the Sugar Experiment Station was about eight inches above the normal. The precipitation in the wet months of May, June, July and December exceeded the normal, while there was a deficit in the drier months of February, October and November. However, the excesses recorded in March and September arrived opportunely and, on the whole, the distribution may be considered as fairly satisfactory.

TABLE I.—**Comparison of January-December Rainfall at Sophia Sugar Experiment Station for 1944 with the Average for 1921-1944.**

Month.	Actual Rainfall, 1944, Inches.	Average Rainfall, 1921—1944, Inches.	Excess or Deficit, Inches.
January 1944	8.08	9.02	−0.94
February "	3.24	4.04	−0.80
March "	9.66	4.78	4.88
April "	9.22	6.03	3.19
May "	13.60	11.53	2.07
June "	15.47	14.51	0.96
July "	16.51	11.41	5.10
August "	4.02	7.99	−3.97
September "	5.46	2.65	2.81
October "	0.31	3.98	−3.67
November "	1.85	5.54	−3.69
December "	16.87	14.82	2.05
Total	104.29	96.30	7.99

VARIETY TRIALS.

The variety trials are detailed under four sub-sections, *viz* :—

(a) Plant cane variety trials;

(b) First ratoon variety trials;

(c) Second ratoon variety trials;

(d) Discussion and summary.

SUB-SECTION A.—PLANT CANE VARIETY TRIALS.

Plant Cane Variety Trials Reaped at Sophia Sugar Experiment Station.

Data from the nine plant cane variety trials harvested at the Sophia Sugar Experiment Station are presented in Table II. It will be noted that:—

i. Yields were, as a general rule, quite good, comparing favourably with those from the sugar estate tests recorded further on.

ii. Cane quality also was satisfactory, except, perhaps, in the case of the two experiments in Field 2 W.

iii. Co. 331 (Co. 214 x Co. 213) was harvested in six tests and led the standard on five occasions, the margin in three instances being statistically significant. In the sixth test P.O.J. 2878 surpassed Co. 331 by a very slight difference. This Indian cane is oustanding for its superior tonnage but its cane is not equal in quality to that of P.O.J. 2878.

iv. D. 166/34 (P.O.J. 2878 x Sorghum) occurred in all the tests but only surpassed the standard on four occasions. This cane does best when harvested early as plants and its yield and quality were adversely affected by the unavoidable delay in harvesting some of these tests.

v. D. 25/38 (Co. 421 x Diamond 10) appeared in four of the trials and was superior to the standard in all. On three occasions the differences in favour of D. 25/38 were statistically significant. The quality of the cane from this seedling is similar to that from P.O.J. 2878, but its fibre content is definitely higher.

vi. D. 28/38 (Co. 421 x Diamond 10), D. 2/40 (Co. 281 x D. 165/30), D. 4/40 (Co. 421 x Diamond 10) and D. 10/40 (Co. 421 x Diamond 10) show promise and will be tested further.

TABLE II.—Results of Plant Cane Variety Trials Reaped at Sophia Sugar Experiment Station.

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre. Tons.	Sucrose in Cane per Acre. % Mean.
	Sophia, Field 10 E. Reaped 22.xi.44 at 13.50 months.						
MEANS OF 4 PLOTS:	D. 25/38	46.96	14.93	5.82	88.1	7.01	132.77
	D. 28/38	39.83	16.06	4.17	87.6	6.39	121.02
	D. 27/38	44.71	12.60	7.07	83.5	5.63	106.63
	D. 24/40	40.81	13.66	4.26	88.0	5.58	105.68
	D. 43/38	36.62	14.84	4.83	88.2	5.43	102.84
	Co. 331	42.79	12.56	6.55	78.7	5.37	101.70
	D. 201/36	39.51	12.50	10.14	85.8	4.94	93.56
	P.O.J. 2878	34.16	13.48	6.77	84.5	4.61	87.31
	D. 166/34	30.56	13.29	6.78	83.0	4.06	76.89
	D. 68/38	32.11	11.86	8.32	82.0	3.81	72.16
	Mean:					5.28	100.00
	Significant Difference, 20 : 1:					0.84	15.91
	Sophia, Field 2 W. "A." Reaped 21.ix.44 at 14.00 months.						
MEANS OF 4 PLOTS:	Co. 331	50.61	12.74	6.66	86.1	6.45	122.39
	D. 28/38	43.25	14.68	5.21	89.4	6.08	115.37
	D. 2/40	47.93	12.56	6.99	87.2	6.02	114.23
	D. 4/40	47.82	11.74	8.02	86.0	5.61	106.45
	D. 25/38	44.55	12.38	7.22	86.4	5.51	104.55
	P.O.J. 2878	36.26	11.68	9.06	85.1	4.24	80.46
	D. 166/34	34.47	12.06	8.12	83.8	4.15	78.75
	D. 6/40	35.31	11.58	8.31	81.5	4.08	77.42
	Mean:					5.27	100.00
	Significant Difference, 20 : 1:					0.91	17.27
	Sophia, Field 2 W. "B." Reaped 25.ix.44 at 14.00 months.						
MEANS OF 4 PLOTS:	D. 166/34	45.91	13.81	4.86	88.5	6.34	135.47
	D. 10/40	42.65	13.13	4.43	87.5	5.60	119.66
	D. 11/40	49.85	10.81	5.75	85.3	5.39	115.17
	P.O.J. 2878	36.41	12.80	9.81	88.1	4.66	99.57
	D. 12/40	41.75	10.52	7.45	80.6	4.39	93.80
	D. 16/40	31.80	12.59	8.12	85.1	4.00	85.47
	D. 15/40	32.84	11.23	10.93	79.2	3.69	78.85
	D. 13/40	31.30	10.91	8.66	82.5	3.41	72.86
	Mean:					4.68	100.00
	Significant Difference, 20 : 1:					0.94	20.09
	Sophia, Field 5 W. "A." Reaped 11.x.44 at 15.00 months.						
MEANS OF 4 PLOTS:	Co. 331	57.16	12.16	6.43	85.4	6.63	129.49
	D. 26/39	44.68	12.89	4.87	87.1	5.76	112.50
	P.O.J. 2878	36.14	15.00	4.58	92.5	5.42	105.86
	D. 17/39	42.98	12.53	5.32	85.1	5.38	105.08
	D. 37/39	40.22	12.83	5.54	87.3	5.16	100.78
	D. 51/38	43.30	10.99	5.95	84.5	4.76	92.97
	D. 166/34	38.66	11.38	6.56	85.7	4.40	85.94
	D. 41/39	34.24	10.07	8.93	79.5	3.45	67.38
	Mean:					5.12	100.00
	Significant Difference, 20 : 1:					1.18	23.05

TABLE II (Contd.).—Results of Plant Cane Variety Trials Reaped at Sophia Sugar Experiment Station.

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.
	Sophia, Field 5 W. "B." Reaped 3.x.44 at 14.75 months.						
MEANS OF 4 PLOTS:	D. 4/40	49.12	14.38	5.10	87.6	7.06	118.06
	D. 2/40	49.96	13.75	4.41	89.1	6.87	114.88
	D. 1/40	47.86	14.20	6.48	84.3	6.80	113.71
	P.O.J. 2878	40.36	15.88	6.56	88.8	6.41	107.19
	D. 6/40	44.61	12.48	4.69	83.8	5.56	92.98
	D. 8/40	40.54	13.20	5.58	86.3	5.35	89.46
	D. 7/40	44.77	11.78	6.18	86.1	5.26	87.96
	D. 166/34	41.05	11.05	6.67	83.8	4.53	75.75
	Mean:					5.98	100.00
	Significant Difference, 20: 1:					1.50	25.08
	Sophia, Field 11 W. "A." Reaped 27.x.44 at 14.50 months.						
MEANS OF 4 PLOTS:	D. 166/34	33.83	16.09	4.96	91.7	5.44	123.64
	D. 21/40	37.25	13.51	6.05	87.0	5.03	114.32
	D. 9/40	31.00	14.81	4.38	91.1	4.59	104.32
	D. 30/40	30.85	14.60	3.65	87.4	4.50	102.27
	D. 24/40	31.60	14.20	4.11	91.0	4.49	102.05
	P.O.J. 2878	25.11	15.13	6.83	90.2	3.80	86.36
	D. 12/40	27.14	13.76	6.67	86.2	3.73	84.77
	D. 20/40	26.62	13.60	5.84	86.1	3.62	82.27
	Mean:					4.40	100.00
	Significant Difference, 20: 1:					1.15	26.14
	Sophia, Field 11 W. "B." Reaped 19.x.44 at 14.25 months.						
MEANS OF 4 PLOTS:	Co. 331	43.56	13.73	3.86	87.7	5.98	127.23
	D. 43/38	33.84	15.28	4.97	89.8	5.17	110.00
	D. 28/38	29.77	17.28	4.68	86.9	5.14	109.36
	D. 25/38	32.91	15.00	4.12	88.6	4.93	104.89
	D. 166/34	31.41	14.41	4.79	87.4	4.53	96.38
	D. 68/38	29.64	14.80	7.78	84.2	4.38	93.19
	P.O.J. 2878	26.31	15.18	7.50	87.0	3.99	84.89
	D. 51/38	28.57	12.08	6.59	85.6	3.45	73.40
	Mean:					4.70	100.00
	Significant Difference, 20: 1:					0.76	16.17
	Sophia, Field 12 W. "A." Reaped 17.x.44 at 13.00 months.						
MEANS OF 4 PLOTS:	D. 43/38	37.00	16.36	3.89	91.2	6.05	114.37
	D. 201/36	41.51	14.00	7.48	86.5	5.81	109.83
	P.O.J. 2878	32.41	16.27	7.09	88.6	5.27	99.62
	Co. 331	41.58	12.49	4.82	87.3	5.19	98.11
	D. 28/38	36.84	13.96	4.30	88.0	5.14	97.16
	D. 9/40	35.77	14.00	3.85	87.5	5.01	94.71
	D. 166/34	33.43	13.69	4.03	89.4	4.58	86.58
	Mean:					5.29	100.00
	Significant Difference, 20: 1:					0.65	12.29
	Sophia, Field 12 W. "B." Reaped 13.x.44 at 12.75 months.						
MEANS OF 4 PLOTS:	Co. 331	41.81	15.31	3.95	88.9	6.86	116.07
	D. 25/38	45.40	13.95	3.80	88.9	6.33	107.11
	D. 24/40	39.27	15.78	4.45	88.3	6.19	104.74
	D. 166/34	37.73	15.51	3.79	90.6	5.85	98.98
	P.O.J. 2878	34.26	16.96	5.04	89.4	5.81	98.31
	D. 43/38	36.42	15.62	4.80	90.6	5.69	96.28
	D. 32/40	36.49	14.93	4.00	89.3	5.45	92.22
	D. 68/38	38.04	13.44	7.50	86.4	5.11	86.46
	Mean:					5.91	100
	Significant Difference, 20: 1:					—	—

Plant Cane Variety Trials Reaped in Berbice and East Demerara.

The results of five plant cane variety trials carried out on the estates of Berbice and East Demerara appear in Table III, and attention may be called to the following points :—

i. D. 166/34 (P.O.J. 2878 x Sorghum) surpassed P.O.J. 2878 in four out of the five tests but was beaten by a slight margin at Port Mourant.

ii. B. 34104 (Co. 281 x B.H. 10/12) gave a high yield of good quality cane at Port Mourant and, in this test, was definitely better than all competitors.

iii. D. 25/38 (Co. 421 x Diamond 10) outyielded the standard in both experiments in which it appeared.

iv. D. 200/36 (P.O.J. 2878 x Co. 213) seems to have been adversely affected at Albion by the bad start the field had. At Port Mourant and Enmore it was nearer its usual form.

TABLE III.— **Results of Plant Cane Variety Trials Reaped in Berbice and East Demerara.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.
	Pln. Port Mourant, Field 5 A.E. Reaped 22.iii.44 at 13.75 months.						
MEANS OF 5 PLOTS:	B. 34104	61.24	15.74	5.60	91.4	9.64	124.23
	D. 200/36	49.40	15.59	6.26	91.7	7.70	99.23
	P.O.J. 2878	52.08	14.78	5.67	89.1	7.70	99.23
	D. 166/34	46.54	16.17	5.73	90.6	7.53	97.04
	D. 17/39	45.92	13.59	7.16	87.7	6.24	80.41
	Mean:					7.76	100.00
	Significant Difference, 20 : 1 :					1.29	16.62
	Pln. Albion, Field 24 K. Reaped 24.iii.44 at 13.50 months.						
MEANS OF 5 PLOTS:	D. 166/34	28.08	15.32	7.37	88.9	4.30	114.97
	D. 25/38	26.91	15.04	5.39	91.0	4.05	108.29
	P.O.J. 2878	25.79	15.22	5.79	87.6	3.92	104.81
	D. 17/39	25.77	14.49	6.21	88.2	3.73	99.73
	D. 61/36	20.29	16.06	5.28	89.8	3.26	87.17
	D. 200/36	20.55	15.46	6.19	92.1	3.18	85.03
	Mean:					3.74	100.00
	Significant Difference, 20 : 1 :					—	—
	Pln. Providence (Ber.), Field 21 G.W. Reaped 9.v.44 at 14.25 months.						
MEANS OF 5 PLOTS:	D. 166/34	35.58	16.37	6.00	90.3	5.83	120.95
	D. 17/39	37.41	14.84	7.07	88.3	5.56	115.35
	P.O.J. 2878	32.13	15.21	6.03	89.1	4.89	101.45
	D. 51/38	34.91	13.21	6.86	86.1	4.61	95.64
	D. 34/38	22.05	14.58	6.04	88.7	3.21	66.60
	Mean:					4.82	100.00
	Significant Difference, 20 : 1 :					0.62	12.86
	Pln. Bath, Field 7, F. Reaped 7.vi.44 at 14.50 months.						
MEANS OF 5 PLOTS:	D. 51/38	49.17	14.24	4.78	89.2	7.00	109.03
	D. 166/34	57.73	12.11	8.35	85.3	6.99	108.88
	D. 201/36	51.83	13.29	7.04	85.9	6.89	107.32
	P.O.J. 2878	44.45	13.78	5.94	88.5	6.12	95.33
	D. 34/38	38.18	13.37	4.84	90.3	5.11	79.59
	Mean:					6.42	100.00
	Significant Difference, 20 : 1 :					0.96	14.95
	Pln. Enmore, Field 4 B.A. Reaped 16.iii.44 at 13.25 months.						
MEANS OF 5 PLOTS:	D. 25/38	31.51	14.75	6.56	89.5	4.65	119.85
	D. 200/36	29.71	15.22	8.02	90.3	4.52	116.49
	D. 166/34	26.38	16.72	5.06	92.9	4.41	113.66
	D. 61/36	22.71	16.24	4.63	92.4	3.69	95.10
	P.O.J. 2878	21.41	14.58	5.49	89.8	3.12	80.41
	D. 34/38	18.95	15.22	4.65	89.2	2.88	74.23
	Mean:					3.88	100.00
	Significant Difference, 20 : 1 :					0.65	16.75

Plant Cane Variety Trials Reaped in West Demerara.

Six plant cane variety trials were reaped in West Demerara. Their results appear in Table IV on which the following comments may be made :—

i. D. 166/34 (P.O.J. 2878 x Sorghum) appeared in five of the tests. It topped the list in three experiments and led P.O.J. 2878 in all.

ii. D. 26/39 (Co. 421 x D. 166/34) surpassed the standard in four out of the five trials in which it appeared. It merits further testing, especially as its cane is of good quality.

iii. D. 26/38 (Co. 421 x Diamond 10) will be tested further, but D. 17/39, D. 37/39 and D. 41/39 will be discarded.

TABLE IV.—**Results of Plant Cane Variety Trials Reaped in West Demerara.**

	Variety.	Cane per Acre. Tons.	Pol. % Cane.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre	
						Tons.	% Mean.
	Pln. Wales, Field 32 Y.R. Reaped 5.vi.44 at 20.00 months.						
Means of 5 Plots :	D. 26/38	43.22	14.97	5.17	91.9	6.47	111.74
	D. 43/38	37.20	16.02	4.44	90.6	5.96	102.94
	D. 166/34	38.43	14.79	7.01	85.6	5.68	98.10
	P.O.J. 2878	33.58	15.09	4.39	91.9	5.07	87.56
	Mean :					5.79	100.00
	Significant Difference. 20 : 1 :					—	—
	Pln. Versailles, Field 14 K.P. Reaped 21.ix.44 at 15.50 months.						
Means of 5 Plots :	D 26./39	52.05	14.92	3.66	92.0	7.76	127.21
	D. 41/39	43.95	12.71	6.35	88.2	5.59	91.64
	D. 37/39	43.64	12.70	6.55	85.7	5.54	90.82
	P.O.J. 2878	42.40	13.04	6.76	88.8	5.53	90.66
	Mean :					6.10	100.00
	Significant Difference. 20 : 1 :					0.89	14.59
	Pln. Leonora, Field 34 E. Reaped 15.vi.44 at 12.25 months.						
Means of 5 Plots :	D. 166/34	32.14	14.34	5.03	89.3	4.61	117.01
	D. 26/39	33.43	13.42	5.76	89.9	4.49	113.96
	D. 41/39	29.50	13.53	6.39	89.9	3.97	100.76
	P.O.J. 2878	28.72	12.88	7.59	86.9	3.83	97.21
	D. 37/39	29.06	11.97	6.17	86.0	3.48	88.32
	D. 17/39	27.38	11.93	8.96	83.4	3.27	82.99
	Mean :					3.94	100.00
	Significant Difference. 20: 1 :					0.62	15.74
	Pln. Uitvlugt, Field 42 de W. Reaped 18.viii.44 at 14.50 months.						
Means of 5 Plots :	D. 166/34	27.51	14.42	4.98	92.7	3.97	104.75
	D. 26/39	28.42	13.89	4.04	93.0	3.95	104.22
	D. 41/39	28.32	13.28	4.85	90.4	3.76	99.21
	P.O.J. 2878	24.33	14.32	5.17	92.3	3.48	91.82
	Mean :					3.79	100.00
	Significant Difference, 20 : 1 :					—	—

TABLE IV (Contd.).—Results of Plant Cane Variety Trials Reaped in West Demerara.

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre.	
						Tons.	% Mean.
	Pln. De	*Kinderen,*	*Field 17*	*E. Reaped*	*9.v.44*	*at 11.25*	*months.*
MEANS OF 5 PLOTS:	D. 160/34	28.85	15.73	7.38	89.9	4.54	112.38
	D. 37/39	29.66	14.74	7.03	89.0	4.37	108.17
	P.O.J.2878	28.13	14.68	6.82	88.7	4.13	102.23
	D. 26/39	27.04	14.78	5.70	89.9	4.00	99.01
	D. 41/39	24.28	15.20	7.47	88.6	3.69	91.34
	D. 17/39	25.47	13.81	6.70	85.1	3.52	87.13
	Mean:					4.04	100.00
	Significant Difference, 20 : 1:					—	—
	Pln. De	*Kinderen,*	*Field 82*	*W. Reaped*	*23.viii.44*	*at 14.00*	*months.*
MEANS OF 5 PLOTS:	D. 37/39	24.98	13.52	7.69	88.0	3.38	126.59
	D. 166/34	21.38	13.38	8.54	86.6	2.86	107.12
	D. 26/39	19.65	13.46	5.66	86.6	2.65	99.25
	P.O.J. 2878	17.73	12.62	8.33	86.0	2.24	83.90
	D. 41/39	17.51	12.63	7.78	84.8	2.21	82.77
	Mean:					2.67	100.00
	Significant Difference, 20 : 1:					0.48	17.98

SUB-SECTION B.—FIRST RATOON VARIETY TRIALS.

FIRST RATOON VARIETY TRIALS REAPED AT SOPHIA SUGAR EXPERIMENT STATION.

The results of the six first ratoon variety trials reaped at the Sophia Sugar Experiment Station are presented in Table V, and attention may be called to the following points:—

i. Both tonnages and quality were satisfactory.

ii. In all the tests but one, D. 166/34 (P.O.J. 2878 x Sorghum) surpassed P.O.J. 2878 both in the yield of the first ratoon crop and in the total yield for two crops.

iii. B. 34104 (Co. 281 x B.H. 10/12) topped the list in both of the experiments in which it appeared.

iv. D. 14/33 (Co. 281 x Diamond 10) led the standard cane by wide margins in all three tests where they met.

v. D. 200/36 (P.O.J. 2878 x Co. 213) was outstandingly better than P.O.J. 2878 in the one test in which they occurred together.

TABLE V.—**Results of First Ratoon Variety Trials Reaped at Sophia Sugar Experiment Station.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre. Tons.	Sucrose in Cane per Acre. % Mean.	Combined Results for 2 Crops, Plants and 1st Ratoons. Variety.	Combined Results for 2 Crops, Plants and 1st Ratoons. Sucrose in Cane per Acre, Tons.
		Sophia, Field 4 E. "A." Reaped 12.ix.44 at 12.50 months.							
MEANS OF 4 PLOTS:	D. 166/34	25.23	15.65	7.84	90.2	3.95	121.91	D. 166/34	7.40
	P.O.J. 2878	17.88	14.23	4.71	89.9	2.54	78.40	P.O.J. 2878	5.66
	Mean:					3.24	100.00		
	Significant Difference, 20: 1:					1.21	37.35		
	Sophia, Field 4 E. "B." Reaped 8.ix.44 at 12.50 months.								
MEANS OF 4 PLOTS:	D. 166/34	27.97	14.92	5.58	87.4	4.17	123.37	D.166/34	8.46
	D. 14/33	24.95	15.55	4.33	89.6	3.88	114.79	D.14/33	7.17
	D. 51/38	22.77	12.04	7.70	86.5	2.74	81.06	D.51/38	6.45
	P.O.J. 2878	18.09	15.02	5.73	88.1	2.72	80.47	P.O.J.2878	5.77
	Mean:					3.38	100.00		
	Significant Difference, 20: 1:					0.74	21.89		
	Sophia, Field 14 E. "A." Reaped 14.ix.44 at 12.25 months.								
MEANS OF 4 PLOTS:	D. 1/37	31.29	14.91	4.78	88.3	4.66	112.83	D. 1/37	11.72
	D. 166/34	30.68	11.92	5.71	88.9	4.58	110.90	D. 166/34	9.35
	P.O.J. 2878	24.17	13.05	8.90	86.9	3.15	76.27	P.O.J. 2878	8.10
	Mean:					4.13	100.00		
	Significant Difference, 20: 1:					1.07	25.91		
	Sophia, Field 14 E. "B." Reaped 15.ix.44 at 12.25 months.								
MEANS OF 4 PLOTS:	B. 34104	35.63	14.48	5.50	86.8	5.16	113.91	B. 34104	11.86
	D. 14/33	30.64	16.09	4.11	91.5	4.91	108.39	D. 14/33	11.30
	D. 166/34	31.16	14.37	7.09	87.1	4.48	98.90	D. 166/34	9.38
	P.O.J. 2878	25.79	13.83	6.03	87.2	3.56	78.59	P.O.J. 2878	8.32
	Mean:					4.53	100.00		
	Significant Difference, 20: 1:					0.83	18.32		
	Sophia, Field 4 W. "A." Reaped 30.iii.44 at 12.75 months.								
MEANS OF 4 PLOTS:	D. 200/36	36.10	15.66	6.07	92.0	5.65	119.96	D. 200/36	11.58
	D. 201/36	35.32	14.39	5.09	91.2	5.08	107.86	D. 201/36	10.84
	P.O.J. 2878	27.22	15.23	6.19	91.7	4.15	88.11	P.O.J. 2878	9.37
	D. 166/34	27.00	14.63	6.81	90.3	3.95	83.86	D. 166/34	8.90
	Mean:					4.71	100.00		
	Significant Difference, 20: 1:					0.93	19.75		
	Sophia, Field 4 W. "B." Reaped 1.iv.44 at 13.00 months.								
MEANS OF 4 PLOTS:	B. 34104	31.52	16.87	5.48	90.8	5.32	124.30	B. 34104	9.36
	D. 166/34	29.84	15.36	7.02	91.5	4.58	107.01	D. 14/33	8.89
	D. 14/33	28.15	15.30	5.81	90.0	4.30	100.47	D. 166/34	8.38
	P.O.J. 2878	26.27	13.97	7.59	86.7	3.67	85.75	D.1/37	7.76
	D. 1/37	27.30	12.94	6.30	85.2	3.53	82.48	P.O.J. 2878	7.06
	Mean:					4.28	100.00		
	Significant Difference, 20: 1:					0.74	17.29		

First Ratoon Variety Trials Reaped in Berbice and East Demerara.

One first ratoon variety trial was reaped in Berbice and one in East Demerara. Their results appear in Table VI where it will be seen that P.O.J. 2878 was outyielded in both cases. Yields at Rose Hall were low but D. 200/36 and D. 14/33 were significantly better than the standard. At Providence, Demerara, D. 166/34 has, in two crops, outyielded P.O.J. 2878 by a substantial difference.

TABLE VI.—**Results of First Ratoon Variety Trials Reaped in Berbice and East Demerara.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre. Tons.	Sucrose in Cane per Acre. % Mean.	Combined Results for 2 Crops, Plants and 1st Ratoons. Variety.	Sucrose in Cane per Acre. Tons.
	Pln. Rose Hall, Field 27 T. Reaped 25.iv.44						*at 11.50 months.*		
MEANS OF 5 PLOTS:	D. 200/36	19.12	14.85	4.58	92.6	2.84	104.03	No Plant Cane Results, Reaped by Estate.	
	D. 14/33	18.42	15.25	4.85	91.9	2.81	102.93		
	D. 166/34	17.52	15.62	5.10	91.8	2.74	100.37		
	P.O.J. 2878	17.37	14.57	5.23	91.6	2.53	92.67		
	Mean:					2.73	100.00		
	Significant Difference, 20: 1:					0.22	8.06		
	Pln. Providence (Dem.), Field 51/52 R.P. Reaped 30.xi.44						*at 11.75 months.*		
MEANS OF 5 PLOTS:	D. 166/34	29.49	13.02	8.33	85.4	4.02	109.54	D. 166/34	9.44
	D. 43/38	27.31	13.37	4.63	85.1	3.65	99.45	D. 43/38	8.32
	P.O.J. 2878	27.47	12.15	7.56	83.9	3.34	91.01	P.O.J. 2878	7.81
	Mean:					3.67	100.00		
	Significant Difference, 20: 1:					—	—		

SUB-SECTION C.—SECOND RATOON VARIETY TRIALS.

Second Ratoon Variety Trials Reaped at Sophia Sugar Experiment Station.

The results of nine second ratoon variety trials reaped at the Sophia Sugar Experiment Station appear in Table VII. It may be noted that:—

i. Both yields and quality were good.

ii. D. 14/33, D. 14/34, D. 200/36, D. 25/38, B. 34104 and Co. 421 have surpassed P.O.J. 2878 by very substantial margins in total yields for three crops.

iii. D. 419/33, D. 166/34, D. 1/37 and Co. 419 were also better than the standard but not quite as good as the varieties just listed.

iv. As a second ratoon and in total yield for three crops, P.O.J. 2878 came last in all nine experiments.

TABLE VII.—Results of Second Ratoon Variety Trials Reaped at Sophia Sugar Experiment Station.

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined Results for 3 Crops, Plants, 1st and 2nd Ratoons. Variety.	Sucrose in Cane per Acre, Tons.
		Sophia,	*Field*	*5 E.*	*Reaped*	*14.iii.44*	*at 12.25*	*months.*	
MEANS OF 5 PLOTS:	Co. 421	33.88	15.06	4.97	91.8	5.10	119.44	Co. 421	14.73
	B. 34104	30.75	15.16	5.85	90.7	4.66	109.13	D. 201/36	14.21
	D. 201/36	30.11	15.46	6.22	92.0	4.65	108.90	B. 34104	13.99
	D. 14/34	28.57	16.01	5.58	91.8	4.57	107.03	D. 14/34	13.59
	D. 1/37	26.89	15.13	6.40	89.9	4.07	95.32	D. 1/37	13.07
	Co. 419	23.57	15.64	6.30	89.6	3.68	86.18	Co. 419	11.29
	P.O.J. 2878	20.82	15.33	5.28	90.4	3.19	74.71	P.O.J. 2878	10.21
	Mean:					4.27	100.00		
	Significant Difference, 20 : 1 :					0.67	15.69		
		Sophia,	*Field*	*9 E.*	*Reaped*	*22.iii.44*	*at 12.00*	*months.*	
MEANS OF 5 PLOTS:	B. 34104	29.07	15.04	4.25	91.1	4.37	119.07	D. 14/34	14.07
	Co. 421	27.29	15.49	4.90	91.6	4.23	115.26	B. 34104	13.95
	D. 1/37	25.15	15.21	5.14	90.5	3.83	104.36	Co. 421	13.23
	D. 14/34	22.12	16.17	5.17	91.2	3.58	97.55	D. 1/37	13.10
	D. 61/36	18.54	16.47	5.10	90.4	3.05	83.11	D. 61/36	11.83
	P.O.J. 2878	20.04	14.90	4.56	90.9	2.99	81.47	P.O.J. 2878	9.50
	Mean:					3.67	100.00		
	Significant Difference, 20: 1					0.71	19.35		
		Sophia,	*Field*	*11 E.*	*Reaped*	*28.iii.44*	*at 11.75*	*months.*	
MEANS OF 5 PLOTS:	D. 166/34	22.22	16.04	5.07	88.4	3.57	119.00	Co. 421	12.65
	Co. 421	22.71	15.51	5.29	90.4	3.52	117.33	B. 34104	12.05
	B. 34104	22.88	15.11	5.14	91.1	3.46	115.33	D. 166/34	10.93
	D. 419/33	18.33	14.90	5.57	90.3	2.73	91.00	Co. 419	9.61
	Co. 419	17.42	15.35	5.35	88.3	2.67	89.00	D. 419/33	9.36
	P.O.J. 2878	14.99	13.89	5.88	88.3	2.08	69.33	P.O.J. 2878	9.03
	Mean:					3.00	100.00		
	Significant Difference, 20: 1:					0.65	21.67		
		Sophia,	*Field 12*	*E. "A."*	*Reaped*	*13.xii.44*	*at 13.00*	*months.*	
MEANS OF 5 PLOTS:	D. 200/36	25.57	13.93	7.85	87.2	3.56	116.72	D. 200/36	15.14
	D. 25/38	25.96	13.45	6.76	90.4	3.49	114.43	D. 25/38	14.06
	D. 14/33	22.13	15.36	3.89	90.8	3.40	111.48	D. 14/33	12.13
	D. 166/34	22.25	13.86	4.95	90.6	3.08	100.98	D. 28/38	12.02
	D. 1/37	22.58	13.07	5.25	88.0	2.95	96.72	D. 1/37	11.02
	D. 28/38	19.89	14.37	5.34	89.0	2.86	93.77	D. 166/34	10.51
	P.O.J. 2878	15.16	13.32	7.81	88.5	2.02	66.23	P.O.J. 2878	9.77
	Mean:					3.05	100.00		
	Significant Difference, 20: 1:					0.47	15.41		
		Sophia,	*Field 12*	*E. "B."*	*Reaped*	*11.xii.44*	*at 13.00*	*months.*	
MEANS OF 5 PLOTS:	D. 13/38	24.28	14.72	4.10	91.4	3.57	117.82	D. 13/38	12.40
	D. 38/38	22.20	14.07	5.38	88.7	3.12	102.97	D. 38/38	12.31
	D. 166/34	21.71	14.06	6.01	90.1	3.05	100.66	D. 166/34	11.50
	P.O.J. 2878	17.11	14.00	3.92	88.7	2.39	78.88	P.O.J. 2878	9.16
	Mean:					3.03	100.00		
	Significant Difference, 20: 1:					0.37	12.21		

TABLE VII (Contd.).—Results of Second Ratoon Variety Trials Reaped at Sophia Sugar Experiment Station.

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined Results for 3 Crops, Plants, 1st and 2nd Ratoons. Variety.	Sucrose in Cane per Acre, Tons.
		Sophia, Field 13 E. "A." Reaped 4.xii.44 at 13.25 months.							
MEANS OF 5 PLOTS:	D. 14/33	27.02	15.93	3.35	92.2	4.31	117.44	D. 25/38	14.47
	D. 25/38	29.59	14.10	3.60	88.6	4.17	113.62	D. 14/33	14.22
	D. 201/36	25.79	14.86	6.28	90.2	3.83	104.36	D. 201/36	12.88
	D. 166/34	20.23	15.71	3.85	89.8	3.18	86.65	D. 166/34	11.70
	P.O.J. 2878	18.89	15.14	3.69	89.2	2.86	77.93	P.O.J. 2878	10.86
	Mean:					3.67	100.00		
	Significant Difference, 20 : 1:					0.66	17.98		
		Sophia, Field 13 E. "B." Reaped 3.xii.44 at 13.25 months.							
MEANS OF 5 PLOTS:	B. 34104	23.74	14.57	3.49	89.6	3.46	110.90	B. 34104	13.08
	D. 166/34	19.60	15.80	3.79	91.3	3.10	99.36	D. 166/34	11.89
	P.O.J. 2878	19.27	14.57	4.50	88.2	2.81	90.06	P.O.J. 2878	10.06
	Mean:					3.12	100.00		
	Significant Difference, 20 : 1:					—	—		
		Sophia, Field 16 E. Reaped 10.xi.44 at 12.75 months.							
MEANS OF 5 PLOTS:	B. 34104	21.60	17.33	4.44	95.3	3.75	120.97	B. 34104	14.59
	D. 419/33	21.98	16.94	3.87	90.6	3.72	120.00	D. 419/33	13.13
	D. 1/37	19.46	17.08	5.38	89.6	3.32	107.10	D. 1/37	12.62
	D. 166/34	16.51	16.79	3.83	90.9	2.77	89.35	D. 166/34	12.38
	P.O.J. 2878	15.41	12.71	4.67	89.0	1.96	63.23	P.O.J. 2878	9.87
	Mean:					3.10	100.00		
	Significant Difference, 20 : 1:					0.39	12.58		
		Sophia, Field 16 W. Reaped 7.xi.44 at 11.50 months.							
MEANS OF 5 PLOTS:	B. 34104	17.80	15.19	3.20	92.3	2.70	126.17	B. 34104	11.38
	P.O.J. 2878	11.91	13.29	4.49	90.1	1.58	73.83	P.O.J. 2878	9.13
	Mean:					2.14	100.00		
	Significant Difference, 20 : 1:					0.51	23.83		

SECOND RATOON VARIETY TRIALS REAPED IN BERBICE AND EAST DEMERARA.

Table VIII records the results from five second ratoon variety tests harvested in Berbice and East Demerara. Yields were satisfactory at Rose Hall and Enmore but low at the remaining sites. Again, however, P.O.J. 2878 came last in every instance, whether the second ratoon yield or the total output for three crops is considered, and it has obviously been outclassed by the other varieties mentioned in the Table.

TABLE VIII.—Results of Second Ratoon Variety Trials Reaped in Berbice and East Demerara.

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined Results for 3 Crops, Plants, 1st and 2nd Ratoons. Variety.	Combined Results for 3 Crops, Plants, 1st and 2nd Ratoons. Sucrose in Cane per Acre, Tons.
	Pln. Rose Hall,	*Field*	*16 B. T.*	*Reaped*		*19.ix.44*	*at 12.00*	*months.*	
MEANS OF 5 PLOTS:	D. 14/33	28.67	15.01	4.43	89.7	4.30	117.17	D. 14/33	14.42
	D. 166/34	26.77	14.46	5.11	89.0	3.87	105.45	D. 166/34	13.45
	D. 200/36	26.02	13.69	7.09	89.1	3.56	97.00	D. 200/36	13.12
	P.O.J. 2878	22.20	13.32	6.82	87.4	2.96	80.65	P.O.J. 2878	11.00
	Mean:					3.67	100.00		
	Significant Difference, 20 : 1:					0.77	20.98		
	Pln. Enmore,	*Field*	*14 E. E.*	*Reaped*		*30.v.44*	*at 10.50*	*months.*	
MEANS OF 5 PLOTS:	Co. 419	30.99	14.43	5.20	87.9	4.47	107.19	Co. 421	12.53
	D. 419/33	28.15	14.95	6.09	86.6	4.21	100.96	D. 419/33	11.78
	Co. 421	27.63	15.21	5.52	87.7	4.20	100.72	D. 166/34	11.48
	D. 166/34	28.00	14.45	5.38	85.3	4.04	96.88	Co. 419	10.76
	P.O.J. 2878	26.35	15.01	6.28	88.6	3.95	94.72	P.O.J. 2878	10.57
	Mean:					4.17	100.00		
	Significant Difference, 20 : 1 :					—	—		
	Pln. Lusignan,	*Field 17*	*G. H.*	*Reaped*		*29.iii.44*	*at 11.25*	*months.*	
MEANS OF 5 PLOTS:	D. 14/34	17.08	15.34	6.05	90.6	2.62	114.91	D. 14/34	12.64
	Co. 419	15.23	15.66	5.32	89.3	2.39	104.82	Co.421	10.09
	Co. 421	15.74	14.79	5.58	92.3	2.33	102.19	Co. 419	9.06
	P.O.J. 2878	12.62	14.20	6.75	90.9	1.79	78.51	P.O.J. 2878	8.80
	Mean:					2.28	100.00		
	Significant Difference, 20 : 1 :					0.34	14.91		
	Pln. Providence,	*(Dem.),*	*Field 7*	*7 P.H.*	*Reaped*	*28.iv.44*	*at 13.00 months.*		
MEANS OF 5 PLOTS:	Co. 421	12.90	13.02	7.31	85.5	1.68	107.01	Co. 421	11.20
	P.O.J. 2878	12.32	11.94	8.58	82.4	1.47	93.63	P.O.J. 2878	10.49
	Mean:					1.57	100.00		
	Significant Difference, 20 : 1 :					—	—		
	Pln.	*Farm,*	*Field 9*	*11 H.P.*	*Reaped*	*9.v.44*	*at 11.00*	*months.*	
MEANS OF 5 PLOTS:	Co. 421	14.81	15.11	6.51	90.5	2.24	133.33	Co. 421	13.53
	P.O.J. 2878	8.07	14.00	8.42	85.7	1.13	67.26	P.O.J. 2878	8.58
	Mean:					1.68	100.00		
	Significant Difference, 20 : 1 :					0.20	11.90		

SUB-SECTION D.—DISCUSSION AND SUMMARY.

In Table IX the mean sucrose yields of all canes in all the experiments harvested to date are compared with that of the standard, P.O.J. 2878, and in Table X certain data, indicative of cane quality, are compared for some of the varieties.

TABLE IX.—**General Mean Sucrose Yields in Tons per Acre from All Experiments.**

Variety.	Plants.		First Ratoons.		Second Ratoons.		Total Yield.	Total Yield, P.O.J. 2878 = 100.00
	Yield.	No. of Expts.	Yield.	No. of Expts.	Yield.	No. of Expts.		
	Three	*Crops,*	*Plants,*	*First*	*and Second*	*Ratoons.*		
D. 25/38	7.04	8	4.71	2	4.88	2	16.63	145.24
D. 14/34	5.95	9	5.42	10	4.68	8	16.05	140.17
B. 34104	5.94	10	5.11	8	4.77	6	15.82	138.17
Co. 421	5.80	10	5.36	10	4.58	9	15.74	137.47
D. 200/36	5.38	8	5.51	6	4.59	4	15.48	135.20
D. 38/38	6.26	1	5.05	1	4.06	1	15.37	134.24
D. 14/33	5.57	10	5.02	9	4.58	5	15.17	132.49
D. 1/37	5.66	8	4.59	7	4.51	5	14.76	128.91
D. 28/38	5.75	5	4.38	1	4.40	1	14.53	126.90
D. 201/36	5.17	6	4.85	3	4.36	2	14.38	125.59
D. 43/38	5.32	7	4.39	2	4.65	1	14.36	125.41
Co. 419	5.09	9	4.58	10	4.26	10	13.93	121.66
D. 166/34	5.20	46	4.45	24	3.96	14	13.61	118.86
D. 61/36	5.54	4	4.86	1	3.17	1	13.57	118.52
D. 419/33	4.52	9	4.98	10	4.03	10	13.53	118.17
P.O.J. 2878	**4.63**	**160**	**3.71**	**105**	**3.11**	**72**	**11.45**	**100.00**
	Two	*Crops,*	*Plants*	*and First*	*Ratoons.*			
D. 51/38	4.64	5	3.74	1	—	—	8.38	100.48
P.O.J. 2878	**4.63**	**160**	**3.71**	**105**	—	—	**8.34**	**100.00**
		One	*Crop,*	*Plants*	*only.*			
D. 21/40	6.13	1	—	—	—	—	—	132.40
D. 26/38	5.91	1	—	—	—	—	—	127.65
Co. 331	5.76	6	—	—	—	—	—	124.41
D. 2/40	5.60	2	—	—	—	—	—	120.95
D. 10/40	5.56	1	—	—	—	—	—	120.09
D. 4/40	5.51	2	—	—	—	—	—	119.01
D. 30/40	5.48	1	—	—	—	—	—	118.36
D. 26/39	5.38	6	—	—	—	—	—	116.20
D. 11/40	5.36	1	—	—	—	—	—	115.77
D. 24/40	5.29	3	—	—	—	—	—	114.25
D. 1/40	4.91	1	—	—	—	—	—	106.05
D. 9/40	4.90	2	—	—	—	—	—	105.83
D. 37/39	4.80	5	—	—	—	—	—	103.67
P.O.J. 2878	**4.63**	**160**	—	—	—	—	—	**100.00**
D. 12/40	4.44	2	—	—	—	—	—	95.90
D. 20/40	4.41	1	—	—	—	—	—	95.25
D. 32/40	4.34	1	—	—	—	—	—	93.74
D. 17/39	4.29	6	—	—	—	—	—	92.66
D. 68/38	4.27	3	—	—	—	—	—	92.22
D. 41/39	4.26	6	—	—	—	—	—	92.01
D. 6/40	4.19	2	—	—	—	—	—	90.50
D. 16/40	3.97	1	—	—	—	—	—	85.75
D. 8/40	3.86	1	—	—	—	—	—	83.37
D. 7/40	3.80	1	—	—	—	—	—	82.07
D. 34/38	3.67	3	—	—	—	—	—	79.27
D. 15/40	3.67	1	—	—	—	—	—	79.27
D. 13/40	3.39	1	—	—	—	—	—	73.22

TABLE X.—**The Quality of the Most Promising Seedlings as Compared with P.O.J. 2878.**

Variety.	Pol % Cane.		Juice Purity.		Glucose Ratio.		Fibre % Cane.	
	% of P.O.J. 2878.	No. of Comparisons.	% of P.O.J. 2878.	No. of Comparisons.	% of P.O.J. 2878.	No. of Comparisons.	% of P.O.J. 2878.	No. of Comparisons.
D. 14/33	109.28	24	103.06	24	74.61	24	105.67	22
D. 419/33	102.01	26	99.96	26	99.11	26	117.55	20
D. 14/34	111.04	27	103.36	27	76.42	27	108.26	25
D. 166/34	103.69	78	100.89	78	95.43	78	97.83	74
D. 61/36	108.46	6	101.63	6	93.18	6	97.65	3
D. 200/36	103.11	18	100.88	18	100.72	18	110.28	18
D. 201/36	96.23	11	99.00	11	123.04	11	113.64	6
D. 1/37	99.00	20	100.10	20	88.27	20	103.04	14
D. 25/38	98.17	12	101.39	12	84.33	12	126.57	9
D. 38/38	108.92	3	102.48	3	92.41	3	85.07	1
B. 34104	105.40	24	102.38	24	88.89	24	107.91	22
Co. 419	101.01	29	99.79	29	96.49	29	97.87	26
Co. 421	101.96	29	100.98	29	89.27	29	114.28	29
Co. 331	89.18	6	97.53	6	80.59	6	129.88	6
P.O.J. 2878	100.00	—	100.00	—	100.00	—	100.00	—

The tables indicate that the variety situation is very favourable indeed. When, some years ago, P.O.J. 2878 entered the local field, it was gladly hailed, and rightly so, as the saviour of the Industry. It was so vigorous and well-suited to local conditions that its superiority was patent and, for a few years, it defied all challengers. Fortunately, however, the Industry now has available a number of canes which are a greater improvement on P.O.J. 2878 than that famous cane was on D. 625, and it should not be long before the differences in the Tables are reflected in the commercial output.

The work of the past year has confirmed the high opinion of D. 14/33, D. 14/34 and Co. 421 previously expressed. It has strengthened the position of D. 200/36 and B.34104 whose distribution for nurseries was advised in the last Bulletin. It has defined the position of D. 419/33, D. 166/34 and Co. 419 as intermediate between the aforementioned varieties and the standard. On the other hand, it has indicated some newcomers, like Nos. 25, 26, 28 and 38 of the 1938 series, Nos. 2, 4, 10 and 21 of the 1940 series, and Co. 331 which show promise and merit careful testing; while a number of the other seedlings listed can be discarded.

So far as quality may be measured by the statistics presented in Table X, it is clear that D. 14/33 and D. 14/34 are outstandingly better than their competitors and, except in special circumstances, the plantings this year should be confined to these two varieties, D. 200/36, B. 34104 and Co. 421.

It is hoped shortly to start distributing D. 25/38 for nursery establishment on the estates pending the completion of its testing.

MANURIAL TRIALS.

The results of 46 manurial experiments harvested during the period under review, are presented in five sub-sections, *viz.*,

A — Nitrogenous manures,

B — Phosphatic manures,

C — Liming materials,

D — Organic manures,

E — Discussion and summary.

Where the experiments were of a complex nature, involving dressings of more than one element, the response to each element is discussed under the appropriate sub-section.

SUB-SECTION A.—NITROGENOUS MANURES.

(A 1—A 6) Various Sources of Nitrogen on Flood-Fallowed Frontland.

Fields 7 S.G., Skeldon; 6 A., Albion; 9 E.B., Providence, B.; 16 E.E., Enmore; 61 V.S., La Bonne Intention and 57 I., Ogle.

(Plant cane results reported in Sugar Bull. No. 12, p. 21.)

As was the case for the plant canes, it must be concluded from Table XI that sodium nitrate alone was the least satisfactory of the formulae tried and that ammonium sulphate, with or without an accompanying one ton/acre of limestone, was the most efficient. Cyanamide was not quite as good as ammonium sulphate and a mixture of ammonium sulphate and sodium nitrate was somewhat better than the latter alone but not as useful as cyanamide.

Owing to war conditions it was not possible to analyse cane samples from all of the tests, but it does not appear that the various formulae have any material differential effect on quality.

TABLE XI.—Effect of Various Sources of Nitrogen on First Ratoons on Flood-fallowed Frontland.

Treatments per Acre.	Skeldon, Field 7 S.G. P.O.J. 2878.	Albion, Field 6 A. Co. 419.	Providence B., Field 9 E.B. P.O.J. 2878.	Enmore, Field 16 E.E. Co. 419.	L.B.I., Field 61 V.S. Diamond 10.	Ogle, Field 57 I. Diamond 10.	Mean of 6 Tests. 1st Ratoons.	Mean of 6 Tests. Plants plus 1st Ratoons.
			Mean Yield in Tons Cane Per Acre.					
No Manure	18.75	32.41	23.75	30.09	20.43	17.89	23.89	62.05
Amm. Sulph., 4 Cwt.	24.03	44.18	30.47	39.26	31.09	26.21	32.54	73.08
„ „ 4 „ / Limestone, 1 Ton	25.98	42.28	28.99	36.48	31.96	25.95	31.94	73.43
Cyanamide, 4 Cwt.	21.32	39.54	30.27	36.19	29.98	26.21	30.58	70.65
Sodium Nitrate, 5.38 „	18.35	35.86	28.49	40.04	20.17	18.25	26.86	65.58
„ „ 2.69 „ / Amm. Sulph., 2 „	21.62	35.21	31.67	36.85	24.43	22.67	28.74	68.56
Sig. Diff., 20:1	2.60	4.78	4.72	—	2.86	2.63	1.96	—
			Mean Pol % Cane.					
No Manure	—	14.49	15.68	—	—	14.08		
Amm. Sulph., 4 Cwt.	—	13.60	15.59	—	—	14.27		
„ „ 4 „ / Limestone, 1 Ton	—	13.22	16.17	—	—	14.63		
Cyanamide, 4 Cwt.	—	13.29	15.99	—	—	15.18		
Sodium Nitrate, 5.38 „	—	14.11	15.67	—	—	14.40		
„ „ 2.69 „ / Amm. Sulph., 2 „	—	14.19	16.15	—	—	14.82		
	—	Differences not statistically significant.						
			Mean Glucose Ratio.					
No Manure	—	4.79	6.94	—	—	8.29		
Amm. Sulph., 4 Cwt.	—	5.53	7.50	—	—	8.89		
„ „ 4 „ / Limestone, 1 Ton	—	5.22	8.72	—	—	9.72		
Cyanamide, 4 Cwt.	—	5.27	7.14	—	—	7.75		
Sodium Nitrate, 5.38 „	—	5.09	6.82	—	—	9.15		
„ „ 2.69 „ / Amm. Sulph., 2 „	—	4.94	7.78	—	—	7.60		
Sig. Diff., 20:1	—	—	—	—	—	1.50		
			Mean Purity.					
No Manure	—	88.3	88.9	—	—	85.9		
Amm. Sulph., 4 Cwt.	—	87.6	85.1	—	—	86.4		
„ „ 4 „ / Limestone, 1 Ton	—	87.2	87.3	—	—	86.8		
Cyanamide, 4 Cwt.	—	86.3	87.1	—	—	87.4		
Sodium Nitrate, 5.38 „	—	88.9	88.1	—	—	87.2		
„ „ 2.69 „ / Amm. Sulph., 2 „	—	88.4	87.4	—	—	88.3		
Sig. Diff., 20:1	—	—	2.06	—	—	—		

(A 7—A 9) Comparison of Ammonium Chloride with Cyanamide on Flood-fallowed Frontland.

It will be seen from Table XII that at all three sites there was a difference in favour of ammonium chloride and statistical examination has revealed that the mean difference of three tons of cane per acre is significant.

TABLE XII.—**Comparison of Ammonium Chloride with Cyanamide on First Ratoons on Flood-fallowed Frontland.**

Treatments per Acre.	Yield in Tons Cane per Acre at Sophia from Fields			
	4 E. (B).	14 E. (A).	14 E. (B).	Mean.
Amm. Chlor., 3.32 Cwt.	26.11	27.50	32.70	28.77
Cyanamide, 4 ,,	22.24	25.38	29.47	25.70
			Mean difference is statistically significant.	

(A 10—A 11) Comparisons of Ammonium Sulphate with Cyanamide on Flood-fallowed Frontland.

Fields 10 Z., Uitvlugt and 65 Z., De Kinderen.

(Plant cane results reported in Sugar Bull. No. 11, p. 22, and first ratoon in No. 12, p. 22.)

The data in Table XIII indicate that cyanamide was less efficient than ammonium sulphate at the Uitvlugt site while at De Kinderen there was some fluctuation. On the whole cyanamide tends to be more satisfactory on the backland, or pegassy clay, and 65 Z. is somewhat at the far limit of the frontland.

TABLE XIII.—**Comparisons of Ammonium Sulphate with Cyanamide on Flood-fallowed Frontland.**

Fertilizer.	Treatments in Cwt. per Acre.			Mean Yields in Tons Cane per Acre.			
	Plants.	1st Ratoons.	2nd Ratoons.	Plants.	1st Ratoons.	2nd Ratoons.	Total for 3 Crops.
			Field 10 Z., Uitvlugt, Diamond 10.				
Amm. Sulph.	2	4	4	36.44	29.99	24.29	90.72
Cyanamide	2	4	4	33.62	26.89	18.43	78.94
Sig. Diff., 20:1:				—	—	2.35	
			Field 65 Z., De Kinderen, P.O.J. 2878.				Total for 2 Crops.
Amm. Sulph.	3	not weighed.	3	53.38	not weighed.	15.33	68.71
Cyanamide	3		3	52.29		14.51	66.80
Amm. Sulph.	6		5	53.92		14.84	68.76
Cyanamide	6		5	59.84		14.04	73.88
Sig. Diff., 20:1:				—		—	

(A 12—A 15) Comparison of Ammonium Sulphate with Ammonium Nitrate on Flood-fallowed Frontland.

Table XIV records the results of four comparisons, two on plants and two on ratoons, made at Pln. Farm. The tests indicate that the two fertilizers are equally efficient as sources of nitrogen.

TABLE XIV.—**Comparison of Ammonium Sulphate with Ammonium Nitrate on Flood-fallowed Frontland.**

Treatments per Acre.	Cane per Acre, Tons.	Pol. % Cane.	Glucose Ratio.	Juice Purity.
	Field 4 F., Farm, Diamond 10, Plants.			
Amm. Sulph., 2 Cwt.	32.16	14.26	20.30	87.7
,, Nit., 1.31 ,,	30.81	14.20	18.54	87.1
	Differences not statistically significant.			
	Field 35-37 E. H.P., Farm, Diamond 10, 1st Ratoons.			
Amm. Sulph., 4 Cwt.	30.82	14.72	17.20	86.9
,, Nit., 2.62 ,,	31.42	14.25	17.46	84.7
	Differences not statistically significant.			
	Field 31 E., Farm, Diamond 10, 2nd Ratoons.			
Amm. Sulph., 4 Cwt.	21.15	14.36	5.24	89.3
,, Nit., 2.62 ,,	20.59	13.95	6.30	89.0
	Differences not statistically significant.			
	Field 19 F., Farm, Diamond 10, Plants.			
Amm. Sulph., 2 Cwt.	26.46	14.86	7.42	92.3
,, Nit., 1.31 ,,	26.98	15.10	6.50	92.2
	Differences not statistically significant.			

(A 16—A 20) Comparison of Ammonium Nitrate with Cyanamide on Flood-fallowed Frontland.

As shown in Table XV, the order of the two sources of nitrogen varied from site to site and the slight mean difference in favour of ammonium nitrate does not exceed the fluctuation which may be due to chance.

TABLE XV.—**Comparison of Ammonium Nitrate with Cyanamide on First and Second Ratoons on Flood-fallowed Frontland.**

Treatments per Acre.	Yield in Tons Cane per Acre at Sophia from Fields.					
	4 E. (A).	4 E. (B).	14 E. (A).	14 E. (B).	16 E.	Mean.
Amm. Nit., 2.62 Cwt.	24.81	26.72	29.69	30.31	21.28	25.96
Cyanamide, 4 Cwt.	20.46	21.72	32.28	30.65	18.42	24.71
	Mean difference is not statistically significant.					

(A 21—A 33) COMPARISON OF AMMONIUM NITRATE WITH OTHER SOURCES OF NITROGEN.

Table XVI records a number of comparisons made by the sugar estates concerned. In each test one acre of the field was treated with ammonium nitrate and the remainder with some other source of nitrogen, as indicated in the Table. The plots were not replicated, but when the results are considered in conjunction with those shown in Tables XIV and XV, it must be concluded that ammonium nitrate has proved itself to be as efficient as the other nitrogenous fertilizers with which it was compared. The tests at 58 L., and 74 L., Leonora, and that at 29 E., Uitvlugt, were on pegassy clay, the remainder on frontland.

TABLE XVI.—Comparison of Ammonium Nitrate with other Sources of Nitrogen.

Equivalent Amounts of Nitrogen as	Yield in Tons Cane/Acre at Field					
	19 Rp., Blairmont. 2nd R., P.O.J. 2878.	23 W., Bath, Plants, P.O.J. 2878.	47 Sv., Leonora. Plants, Diamond 10.	M. Ed., Leonora. 2nd R., Diamond 10.		
Amm. Sulphate	32.11	42.98	27.6	19.3		
,, Nitrate	32.92	52.04	31.2	20.6		
	15 A.O.G., Port Mourant. 2nd R., P.O.J. 2878.	39 J.E., Port Mourant. Plants, P.O.J. 2878.	27 L.B.I., L.B.I. 1st R., P.O.J. 2878.	14 E., Uitvlugt. 1st R., P.O.J. 2878.	29 E., Uitvlugt. 1st R., P.O.J. 2878.	27 M.Z., Uitvlugt. Plants, P.O.J. 2878.
Cyanamide	39.95	42.12	27.55	36.90	28.29	52.50
Amm. Nitrate	38.30	47.65	27.45	35.10	22.35	41.00
	11 R.E., Port Mourant 2nd R., P.O.J. 2878.					
Amm. Sulph., Chloride, Nitrate	33.60					
	30.60					
	58 L., Leonora. 2nd R., P.O.J. 2878.					
Amm. Chloride	19.5					
,, Nitrate	19.6					
	74 L., Leonora. Plants, Co. 421.					
Cyanamide, Amm. Chloride	23.50					
,, Nitrate	23.60					

(A 34—A 38) Various Sources of Nitrogen on Pegassy Clay.

Fields 34 S.D., Cane Grove; 20 Arc., Farm; 63 G.G., and 96 G.D., Diamond; and 48 De W., Uitvlugt.

(Plant cane results reported in Sugar Bull. No. 12, p. 24.)

The five tests recorded in Table XVII form part of a chain of six. Under the conditions prevailing as a result of the war, however, it was not possible to harvest the sixth experiment or to analyse cane samples from all of those which were harvested.

The yield at Farm was very poor and the increases due to fertilizer applications have been, on the whole low.

As in the plant canes on this soil type and also as in the corresponding chain on flood-fallowed frontland, sodium nitrate was the least satisfactory of the formulae tested. The increase in favour of ammonium sulphate with limestone over ammonium sulphate alone is not statistically significant but there is a tendency for ammonium sulphate with limestone and for cyanamide to give the highest returns.

TABLE XVII.—Effect of Various Sources of Nitrogen on First Ratoons on Pegassy Clay.

Treatments per Acre.	Cane Grove, Field 34 S.D. P.O.J. 2878.	Farm, Field 20 Arc. Diamond 10.	Diamond. Field 63 G.G. P.O.J. 2878.	Diamond. Field 96 G.D. Diamond 10.	Uitvlugt. Field 48 De W. P.O.J. 2878.	Mean of 5 Tests. 1st Ratoons.	Mean of 5 Tests. Plants plus 1st Ratoons.
			Mean Yield in Tons Cane per Acre.				
No Manure	22.12	11.84	42.01	26.87	22.47	25.06	56.14
Amm. Sulph., 5 Cwt.	23.69	14.82	39.83	32.86	26.74	27.59	61.47
„ „ 5 „ / Limestone, 1 Ton	23.30	16.18	44.64	30.75	27.08	28.39	62.25
Cyanamide, 5 Cwt.	23.36	17.85	40.13	31.74	27.44	28.10	62.30
Sodium Nitrate, 6.73 „	24.78	10.53	39.47	29.84	26.38	26.20	58.68
„ „ 3.36 „ / Amm. Sulph., 2.50 „	25.23	13.71	38.55	31.11	24.74	26.67	61.10
Sig. Diff., 20:1	2.98	—	—	—	—	2.02	
			Mean Pol % Cane.				
No Manure	—	15.74	15.21	15.41	—		
Amm. Sulph., 5 Cwt.	—	15.88	15.70	15.38	—		
„ „ 5 „ / Limestone, 1 Ton	—	15.88	15.40	15.73	—		
Cyanamide, 5 Cwt.	—	15.98	15.21	15.48	—		
Sodium Nitrate, 6.73 „	—	15.46	15.40	15.04	—		
„ „ 3.36 „ / Amm. Sulph., 2.50 „	—	15.86	14.83	14.98	—		
			Differences not statistically significant.				
			Mean Glucose Ratio.				
No Manure	—	6.98	7.20	6.37	—		
Amm. Sulph., 5 Cwt.	—	6.42	7.21	6.94	—		
„ „ 5 „ / Limestone, 1 Ton	—	6.32	6.12	6.66	—		
Cyanamide, 5 Cwt.	—	6.34	8.25	6.52	—		
Sodium Nitrate, 6.73 „	—	6.36	5.98	6.90	—		
„ „ 3.36 „ / Amm. Sulph., 2.50 „	—	6.60	9.20	6.98	—		
Sig. Diff., 20:1	—	—	2.12	—	—		
			Mean Purity.				
No Manure	—	90.1	90.8	90.5	—		
Amm. Sulph., 5 Cwt.	—	90.6	90.9	90.1	—		
„ „ 5 „ / Limestone, 1 Ton	—	90.5	90.5	91.7	—		
Cyanamide, 5 Cwt.	—	90.4	89.5	90.8	—		
Sodium Nitrate, 6.73 „	—	89.5	90.5	89.8	—		
„ „ 3.36 „ / Amm. Sulph., 2.50 „	—	90.7	88.4	90.2	—		
Sig. Diff., 20:1	—	—	1.74	1.18	—		

(A 39) Comparison of Ammonium Sulphate with Cyanamide on Pegassy Clay.

Field 40 E., Uitvlugt.

(Plant cane results reported in Sugar Bull. No. 11, p. 24, and first ratoon in No. 12, p. 27.)

It will be seen from Table XVIII that in all three crops ammonium sulphate was superior to cyanamide and that in the second ratoons the difference was statistically significant. Over a three-crop cycle the total difference in favour of ammonium sulphate would be equal to more than half a ton of sugar per acre.

TABLE XVIII.—**Comparison of Ammonium Sulphate with Cyanamide on Pegassy Clay.**

Treatments in Cwt. per Acre.			Mean Yields in Tons Cane per Acre.			
			Uitvlugt, Field 40 E., P.O.J. 2878.			
	Plants.	1st Ratoons.	2nd Ratoons.	Plants.	1st Ratoons.	2nd Ratoons.	Total for 3 Crops.
Amm. Sulph.,	5	5	4	27.15	27.67	13.71	68.53
Cyanamide,	5	5	4	25.47	25.27	11.40	62.14
Sig. Diff., 20:1:				—	—	1.63	

(A 40—A 41) Effect of Cyanamide and Ammonium Sulphate on Pegassy Clay.

Fields 19 G., Diamond and 100 A.C., Leonora.

(Plant cane results reported in Sugar Bull. No. 12, p. 25.)

The results presented in Table XIX indicate only slight, and for the most part statistically insignificant, increases from the doses of nitrogen given. The response to nitrogen on pegassy clay is very erratic but these results offer some confirmation of previous indications that this soil type requires somewhat heavier dressings.

TABLE XIX.—**Effect of Cyanamide and Ammonium Sulphate on Pegassy Clay.**

Treatments per Acre.	Mean Yields in Tons Cane per Acre at					
	Diamond, Field 19 G., Diamond 10.			*Leonora, Field 100 A.C., P.O.J. 2878.*		
	Plants.	1st Ratoons.	2nd Ratoons.	Plants.	1st Ratoons.	2nd Ratoons.
No Nitrogen	55.86	20.98	29.77	39.15	34.43	29.12
Cyanamide, 1.5 Cwt.	53.18	21.06	—	43.27	36.28	31.23
,, 3.0 ,,	55.60	21.10	—	42.51	37.06	31.86
Amm. Sulph., 1.5 ,,	—	—	30.97	—	—	—
,, ,, 3.0 ,,	—	—	32.46	—	—	—
Sig. Diff., 20:1:	—	—	—	3.56	—	—

SUB-SECTION B.—PHOSPHATIC MANURES.

(B 1—B 4) Phosphatic Manuring on Flood-fallowed Frontland.

Fields 3 Ab., 13 B.L., 64 B.L., Blairmont, and 29 V.B., Wales.

(Plant cane results reported in Sugar Bull. No. 11, p. 25, and first ratoon in No. 12, p. 29.)

It will be noted from Table XX that none of the Blairmont fields showed any significant response to the phospate dressings. At Wales, on the other hand, there were suggestive increments in both the plants and the first ratoons, and the residual effect of the two previous applications was significant in the second ratoons.

TABLE XX.—Effect of Phosphatic Manuring on Flood-fallowed Frontland.

Fertilizer.	Treatments per Acre. Plants. Cwt.	Plants. lb. P_2O_5	1st Ratoons. Cwt.	1st Ratoons. lb. P_2O_5	2nd Ratoons. Cwt.	Mean Yields in Tons Cane per Acre. Blairmont. Field 3 Ab., P.O.J. 2878, Plants.	Field 13 B.L., Co. 419, Plants.	Field 64 B.L., P.O.J. 2878, 1st Ratoons.
No P.	—	—	—	—	—	60.21	63.10	23.81*
Super.	3	54	3	54	—	62.28	62.68	23.92*
"	6	108	6	108	—	63.72	61.33	21.11*
"	9	162	9	162	—	61.72	62.74	21.00*
						Differences not statistically significant.		
						Field 29 V.B., Wales, P.O.J. 2878. Plant Canes.	1st Ratoons.	2nd Ratoons.
No P.	—	—	—	—	—	27.46	33.29	20.17
Rock P.	3	103	9	309	—	28.79	36.34	22.86
" "	6	206	12	412	—	28.93	35.02	23.57
" "	9	309	15	515	—	30.21	35.20	23.52
B. Slag	6	101	12	202	—	30.31	35.68	23.62
Sig. Diff., 20: 1:						—	—	2.09

*Experiment commenced on 1st Ratoons, plant canes not treated.

(B 5—B 6) Phosphatic Manuring on Pegassy Clay.

Fields 19 G., Diamond; and 100 A.C., Leonora.

(Plant cane results reported in Sugar Bull. No. 12, p. 30.)

It will be seen from Table XXI that there was a significant response at the Diamond field to a 5 cwt. acre dressing of basic slag but that there was no further increase when the dressing was doubled. It is somewhat surprising that there was no residual effect on the ratoon crops.

At the Leonora site, on the other hand, there appears to be no need for phosphate dressings.

TABLE XXI.—**Effect of Phosphatic Manuring on Pegassy Clay.**

Treatments per Acre to Plants Only.	Mean Yields in Tons Cane per Acre at					
	Diamond, Field 19 G., Diamond 10.			*Leonora, Field 100 A.C., P.O.J. 2878.*		
	Plants.	1st Ratoons.	2nd Ratoons.	Plants.	1st Ratoons.	2nd Ratoons.
No Phosphate	52.18	21.72	31.77	40.86	36.73	31.57
Basic Slag, 5 Cwt.	56.14	20.27	30.46	40.25	35.08	30.07
" " 10 "	56.31	21.15	30.98	43.81	35.96	30.57
Sig. Diff., 20:1:	4.13	—	—	—	—	—

SUB-SECTION C.—LIMING MATERIALS.

(C 1) Liming Materials on Flood-Fallowed Frontland.

Field 71 B.L., Blairmont.

(Plant cane results reported in Sugar Bulls. Nos. 5, pp. 88-90; 10, p. 36.)
(First ratoon results reported in Sugar Bulls. Nos. 6, pp. 79-81; 11, p. 30.)
(Second ratoon results reported in Sugar Bulls. Nos. 7, pp. 90-92; 12, p. 35.)
(Third ratoon results reported in Sugar Bull. No. 8, pp. 78-79.)

Table XXII indicates that there was no significant residual effect of the liming materials on the third ratoon crop of the second cycle. There is some suggestion, in the case of three treatments, that the liming materials may have a slight cumulative beneficial effect over a succession of eight crops but, on the other hand, the total yield of the plots receiving one ton/acre of limestone is no better than that of the control.

TABLE XXII.—**Effect of Liming Materials on Flood-fallowed Frontland.**

Field 71 B.L., Blairmont.

Treatments per Acre to Plants of Each Cycle Only.		Yields in Tons Cane per Acre.	
		3rd Ratoons.	Total for 8 Crops (over 2 cycles).
No Liming Materials		17.93	279.15
Lime 0.5 Tons		20.35	285.71
" 1.0 "		21.42	283.92
Ground Limestone 0.5 "		20.98	281.02
" " 1.0 "		17.87	279.51
Sig. Diff., 20:1:		—	

SUB-SECTION D.—ORGANIC MANURES.

(D 1—D 3) PEN MANURE AND FILTERPRESS CAKE ON FLOOD-FALLOWED FRONTLAND.

Fields 10 Z., Uitvlugt, and 65 Z., De Kinderen.

(Plant cane results reported in Sugar Bull. No. 11, p. 32, and first ratoon results in No. 12, p. 38.)

Table XXIII indicates that while the organic manures were quite satisfactory at Uitvlugt for the plant cane crop to which they were applied, they had little or no residual effect on the succeeding ratoons.

At De Kinderen the filterpress cake proved less satisfactory than the pen manure. This conclusion has been drawn too for the trial on pegassy clay in Field 40 E., Uitvlugt (D 4 and 5), and it is of interest to note that Field 65 Z., De Kinderen, is somewhat on the borderline between front land and pegassy clay.

TABLE XXIII.—Effect of Pen Manure and Filterpress Cake on Flood-fallowed Frontland.

Fertilizer.	Treatments per Acre.			Mean Yields in Tons Cane per Acre.			
				Field 10 Z., Uitvlugt, Diamond 10.			
	Plants.	1st Ratoons.	2nd Ratoons.	Plants.	1st Ratoons.	2nd Ratoons.	Total for 3 Crops.
			Latin Square "A".				
Amm. Sulph., Cwt.	2	4	4	35.99	28.15	23.39	87.53
Press Cake, Tons.	6	—	—				
Amm. Sulph., Cwt.	—	3	3	34.29	25.73	19.36	79.38
Pen Manure, Tons.	10	—	—				
Amm. Sulph., Cwt.	—	3	3	36.07	25.15	19.78	81.00
Sig. Diff., 20: 1:				—	—	—	
			Latin Square "B".				
Amm. Sulph., Cwt.	2	4	4	36.88	31.83	25.19	93.90
Press Cake, Tons.	6	—	—				
Amm. Sulph., Cwt.	—	2	2	38.83	29.68	17.76	86.27
Pen Manure, Tons.	10	—	—				
Amm. Sulph., Cwt.	—	2	2	33.25	30.32	19.45	83.02
Sig. Diff., 20: 1:				—	—	2.35	
		Field 65 Z., De Kinderen, P.O.J. 2878.					Total for 2 Crops.
Amm. Sulph., Cwt.	3	not weighed	3	53.38	not weighed	15.33	68.71
" " "	6		5	53.92		14.84	68.76
Press Cake, Tons.	6		—				
Amm. Sulph., Cwt.	—		3	47.38		14.72	62.10
Pen Manure, Tons.	10		—				
Amm. Sulph., Cwt.	—		3	54.84		14.95	69.79
Sig. Diff., 20: 1:				—		—	

(D 4—D 5) FILTERPRESS CAKE AND PEN MANURE ON PEGASSY CLAY.

Field 40 E., Uitvlugt.

(Plant cane results reported in Sugar Bull. No. 11, p. 33, and first ratoon in No. 12 p. 44)

Tests discussed in previous Bulletins have indicated that the normal plant cane dressing of ammonium sulphate can be replaced by 12 to 15 tons/acre of filterpress cake or pen manure. Under the conditions of the experiments reported in Table XXIV, 15 tons/acre of pen manure has proved more satisfactory than 12 tons/acre of filterpress cake.

TABLE XXIV.—**Effect of Filterpress Cake and Pen Manure on Pegassy Clay.**

Fertilizer.	Treatments per Acre.			Mean Yields in Tons Cane per Acre. Field 40 E., Uitvlugt, P.O.J. 2878.			
	Plants.	1st Ratoons.	2nd Ratoons.	Plants.	1st Ratoons.	2nd Ratoons.	Total for 3 Crops.
Latin Square "A."							
Amm. Sulph., Cwt.	5	5	4	27.46	27.29	14.86	69.61
Press Cake, Tons.	12	—	—				
Amm. Sulph., Cwt.	—	4	3	25.23	26.92	12.53	64.68
Pen Manure, Tons.	15	—	—				
Amm. Sulph., Cwt.	—	4	3	25.49	28.91	14.33	68.73
Sig. Diff., 20: 1:				—	—	1.63	
Latin Square "B."							
Amm. Sulph., Cwt.	5	5	4	26.83	28.06	12.57	67.46
Press Cake, Tons.	12	—	—				
Amm. Sulph., Cwt.	—	3	2	24.55	25.04	10.75	60.34
Pen Manure, Tons.	15	—	—				
Amm. Sulph., Cwt.	—	3	2	28.01	25.29	12.22	65.52
Sig. Diff., 20: 1:				—	—	—	

(D 6—D 7) MOLASSES ON PEGASSY CLAY.

Fields 19 G., Diamond; and 100 A.C., Leonora.

(Plant cane results reported in Sugar Bull. No. 12, p. 42.)

The data in Table XXV illustrate the marked beneficial effect of molasses dressings on plant canes and indicate that the amount applied need not exceed seven tons per acre. There are indications of slight residual effects on the ratoons but the differences are not statistically significant.

TABLE XXV.—**Effect of Molasses on Pegassy Clay.**

Treatments per Acre to Plants Only.	Mean Yields in Tons Cane per Acre					
	Diamond, Field 19 G., Diamond 10.			*Leonora, Field 100 A.C., P.O.J. 2878.*		
	Plants.	1st Ratoons.	2nd Ratoons.	Plants.	1st Ratoons.	2nd Ratoons.
No Molasses	50.95	20.38	29.94	35.62	33.13	29.34
Molasses, 6.62 Tons	56.06	21.36	30.92	44.48	38.42	32.55
" 13.24 "	57.63	21.39	32.34	44.83	36.21	30.32
Sig. Diff., 20: 1:	4.13	—	—	3.56	—	—

SUB-SECTION E.—DISCUSSION AND SUMMARY.

Nitrogenous Manures.

A consideration of the results recorded in this paper and of those presented in previous Bulletins leads to the following conclusions :—

i. Sodium nitrate is not a satisfactory substitute for ammonium sulphate;

ii. Cyanamide is more satisfactory than sodium nitrate as a substitute for ammonium sulphate but, on the frontland clays especially, is not quite as efficient as ammonium sulphate or ammonium chloride.

iii. Ammonium nitrate is as efficient as ammonium sulphate.

The nitrogen content of ammonium nitrate is considerably higher than that of ammonium sulphate and there should be some saving in transporting and handling the former as compared with the latter. Also, ammonium nitrate would leave no potentially harmful sulphate radicle in the soil, and it will store for several months satisfactorily under local conditions.

If, therefore, ammonium nitrate could be regularly obtained at satisfactory prices, the Industry might well consider its full adoption as a substitute for ammonium sulphate.

Phosphatic Manures.

No responses were obtained at Blairmont, where dressings were tried on three fields, or at Field 109 A.C., Leonora, but at 19 G., Diamond, and at 29 V.B., Wales, there were signs of phosphate deficiency.

Liming Materials.

There is no definite information, so far, that small dressings of lime or limestone, at each replanting, have had any effect on the yield of cane at 71 B.L., Blairmont.

Organic Manures.

The experiments indicate that pen manure is somewhat more satisfactory than filterpress cake, and that although satisfactory for the crops to which they are applied, pen manure, filterpress cake and molasses have but slight, if any, residual effects on succeeding crops.

THE VARIETY AND FERTILIZER POSITION OF THE SUGAR INDUSTRY, X.

BY

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VARIETAL COMPOSITION OF THE 1945 HARVESTS.

Table I is compiled from returns kindly supplied by the sugar estates, which produce some 98% of the Colony's output. Canefarmers, who produce the remaining 2% of the crop, plant mainly P.O.J. 2878 and Diamond 10.

TABLE I.—Percentage Distribution of the Varieties to be Reaped in 1945.

Variety.	Total English Acres in the Colony.		Percentage in West Demerara.	Percentage along Demerara River Banks.	Percentage in East Demerara.	Percentage in Berbice.
P.O.J. 2878	32,901.00	(54.8%)	13.2	4.8	30.2	51.8
Diamond 10	16,055.38	(26.7%)	12.4	61.1	12.6	13.9
Co. 421	3,796.57	(6.3%)	16.9	6.5	21.3	55.3
Co. 419	2,937.15	(4.9%)	39.8	8.2	15.3	36.7
D. 166/34	1,336.00	(2.2%)	13.5	30.8	20.6	35.1
D. 14/34	1,011.15	(1.7%)	16.4	5.3	48.1	30.2
D. 14/33	581.61	(1.0%)	33.2	—	25.9	40.9
Other Canes	1,431.87	(2.4%)	4.5	50.0	13.4	32.1
	60,050.73	(100.0%)				

The decline in the acreage which was noted for 1944, as compared with 1943, has continued, and is attributable almost entirely to labour difficulties, for without these the effects of the 1942-43 floods, in this regard, would by now have been neutralised.

Tables I, II and III indicate:—

i. A further fall in the proportion of P.O.J. 2878;

ii. A slight fluctuation returning Diamond 10 to its 1943 position:

iii. An increase in the area planted to canes other than P.O.J. 2878 and Diamond 10 from a total of 5.5% of the acreage in 1943, to 9.4% in 1944 to 18.5% in 1945;

iv. Marked increases in the areas devoted to D. 14/33, D. 14/34, Co. 421 and B. 34104.

TABLE II.— **Acreages of the Varieties Constituting "Other Canes."**

Variety.	English Acres. 1944	1945	Variety.	English Acres. 1944	1945	Variety.	English Acres. 1944	1945
D. 625	3	—	D. 419/33	162	194	Diamond 201	54	69
D. 49/30	194	183	D. 450/33	28	8			
D. 66/30	177	149	D. 456/33	92	57	B. 34104	2	105
D. 14/33	78	582*	D. 14/34	153	1,011*	Co. 213	132	60
						S. C. 12/4	363	419

*Shown separately in Table I.

TABLE III.— **Comparison of Areas Under Various Canes in British Guiana, 1938–1945.**

Variety.	Per Cent. of Total Area in the Colony. 1938	1939	1940	1941	1942	1943	1944	1945
D. 625	20.6	8.0	2.8	0.6	—	—	—	—
"Mixed"	4.0	0.8	0.6	0.2	—	—	—	—
Diamond 10	41.3	43.5	37.1	31.1	28.1	26.5	25.5	26.7
P.O.J. 2878	31.7	45.7	57.6	66.0	68.8	68.0	65.1	54.8
D. 166/34	—	—	—	—	—	1.6	2.2	2.2
Co. 419	—	—	—	—	—	1.3	3.0	4.9
Co. 421	—	—	—	—	—	—	1.6	6.3
D. 14/34	—	—	—	—	—	—	—	1.7
D. 14/33	—	—	—	—	—	—	—	1.0
Other Canes	2.4	2.0	1.9	2.1	3.1	2.6	2.6	2.4

CYCLE AGE OF THE CROPS.

Table IV shows a welcome improvement in the proportion of plant canes and it is to be hoped that this improvement will be maintained and the total acreage restored to normal.

TABLE IV.— Cycle Age of the Crops, 1942-1945.

Category.	Percentage in				Category.	Percentage in			
	1942	1943	1944	1945		1942	1943	1944	1945
Plants	29.4	22.4	17.1	24.9	Third Ratoons	15.5	16.7	20.7	22.3
First Ratoons	23.7	29.2	24.1	17.2	Fourth Ratoons	5.6	6.1	6.3	9.1
Second Ratoons	24.5	24.4	28.2	24.0	Fifth Ratoons	1.3	1.2	3.0	2.5

COMMERCIAL YIELDS.

Table V presents the weighted mean yields of the various canes reaped on the estates in 1944. While undue importance should not be attached to the order of merit where only small acreages are involved, it is clear that the commercial data are generally in fair agreement with and tend to confirm the findings from the experimental plots and the advice given by the Sugar Experiment Station.

FERTILIZERS IN 1944.

Table VI, adapted from the Reports of the Comptroller of Customs, shows the fertilizer imports for the past five years. The year 1944 was a distinct improvement on 1943, supplies of nitrogen, the most important element, being satisfactory and much more reasonable in price. Neither phosphate nor potash was available, however, and limestone supplies were both deficient and expensive.

Almost all the imported fertilizers are used on the sugar estates and Table VII, compiled from returns kindly supplied by the estate Managers, gives statistics of quantities and prices for 1942 to 1944.

TABLE V.—Weighted Mean Commercial Yields under Estate Conditions, 1944.

Variety.	Acres Harvested.	Crusher Juice		Fibre % Cane.	Tons 96° Sugar per Acre.*
		Pol. %	Purity.		
		Plant	*Canes.*		
D. 14/34	74.7	14.16	84.35	12.79	4.35
Co. 421	528.3	14.15	81.52	15.25	4.15
D. 14/33	66.0	15.41	85.10	14.44	3.88
S. C. 12/4	210.5	—	—	—	3.73
Co. 419	650.5	15.30	83.61	13.93	3.65
P.O.J. 2878	3,773.5	15.05	84.85	15.45	3.52
Diamond 10	3,224.2	14.76	82.19	14.45	3.48
D. 49/30	97.5	16.41	86.60	12.74	3.28
D. 166/34	284.4	15.22	84.87	14.60	3.27
D. 419/33	61.7	15.41	85.48	—	2.84
		First	*Ratoons.*		
D. 419/33	68.0	14.85	85.48	14.16	3.28
D. 66/30	46.0	16.12	84.50	—	3.25
Co. 419	712.7	14.93	82.85	13.32	3.17
Co. 421	89.1	15.67	84.16	14.99	2.88
Diamond 201	23.2	15.04	81.40	—	2.85
D. 330/33	20.0	15.34	85.20	—	2.60
P.O.J. 2878	7,577.4	15.96	86.97	16.38	2.59
Diamond 10	4,229.0	15.25	84.32	14.10	2.44
D. 166/34	536.9	15.52	84.49	13.21	2.43
S.C. 12/4	64.5	—	—	—	1.60
D. 49/30	52.4	16.55	88.23	13.23	1.56
		Second	*Ratoons.*		
Co. 419	81.3	14.06	80.46	16.52	3.46
D. 66/30	71.7	15.50	83.20	—	3.13
D. 166/34	271.4	15.36	84.31	12.47	2.42
D. 456/33	50.0	16.87	86.89	14.57	2.32
P.O.J. 2878	10,430.0	15.38	85.56	14.96	2.26
D. 49/30	19.3	15.89	86.50	13.70	2.07
Diamond 10	5,264.1	15.03	82.35	14.39	2.00
Co. 213	53.8	13.78	83.11	—	1.81
		Third	*Ratoons.*		
D. 66/30	51.0	15.66	85.13	—	2.73
Co. 213	19.4	13.26	81.83	—	2.52
D. 166/34	84.8	15.60	83.47	14.50	2.18
P.O.J. 2878	10,564.0	15.38	84.76	15.03	2.12
Diamond 10	1,296.8	14.41	82.08	13.31	2.09
D. 49/30	11.5	17.07	88.90	14.00	1.63
D. 450/33	21.7	14.18	79.10	—	1.56
D. 456/33	15.0	15.64	84.64	—	1.56

* Undue importance should not be attached to the order of merit when only a small acreage has been harvested.

TABLE VI.—Fertilizers Imported into British Guiana in Recent Years.

Years.	Nitrogenous Fertilizers (almost entirely Ammonium Sulphate).			Manurial Lime and Limestone.			Other Fertilizers (mainly Superphosphate and Basic Slag with some Potassium Sulphate).			Total Imports.	
	Tons.	Value $	Value per Ton, $	Tons.	Value $	Value per Ton, $	Tons.	Value $	Value per Ton, $	Tons.	Value $
1940	17,179†	1,000,526†	58.24	5,585	41,915	7.50	1,809*	54,429*	30.09	24,573	1,096,870
1941	8,315†	592,555†	71.26	9,012	70,934	7.87	203	6,893	33.96	17,530	670,382
1942	6,040†	553,161†	91.58	5,642	61,810	10.96	301*	15,454*	51.34	11,983	630,425
1943	2,051†	185,042†	90.22	1,015	14,787	14.57	22*	949*	43.14	3,088	200,778
1944	11,993†	879,468†	73.33	2,581	37,963	14.71	...	...	...	14,574	917,431
Mean	9,116	642,150	70.44	4,767	45,482	9.54	5.84	19,431	33.27	14,467	707,063
% of Mean Annual Imports:	63.01	90.82		32.95	6.43		4.04	2.75			

*Includes
1940: 42 tons of Potassium Sulphate, valued at $2,795 or $66.55 per ton.
1942: All Superphosphate of Lime.
1943: All Pulverized Rock Phosphate.

†Includes
1940: 1,001 tons of Sodium Nitrate, valued at $ 50,979 or $ 50.93 per ton.
1941: 5,000 „ „ Cyanamide, „ „ $381,873 or $ 76.37 per ton.
1942: 4,550 „ „ „ „ „ $406,938 or $ 89.44 per ton.
„ : 1,306 „ „ Ammonium Chloride „ „ $134,426 or $102.93 per ton.
1943: 1,339 „ „ Cyanamide „ „ $112,709 or $ 84.17 per ton.
„ : 706 „ „ Ammonium Chloride „ „ $ 71,587 or $101.40 per ton.
„ : 5 „ „ „ Nitrate „ „ $ 631 or $126.20 per ton.
„ : 1 ton of Potassium Nitrate „ „ $ 115 or $115.00 per ton.
1944: 2,738 tons of Cyanamide „ „ $216,974 or $ 79.25 per ton.
„ : 1,500 „ „ Ammonium Chloride „ „ $156,867 or $104.58 per ton.
„ : 41 „ „ „ Nitrate „ „ $ 3,579 or $ 87.29 per ton.
„ : 2 „ „ Sodium „ „ „ $ 139 or $ 69.50 per ton.

TABLE VII.—Values and Quantities of Fertilizers Used on British Guiana Sugar Estates, 1942-1944.

Fertilizer.	Value, $			Per cent. of Total Value			Per Ton, $.			Quantity, Tons.			Per cent. of Total Quantity.		
	1942	1943	1944	1942	1943	1944	1942	1943	1944	1942	1943	1944	1942	1943	1944
Ammonium Sulphate	253,757.36	34,505.41	336,618.07	30.3	5.6	44.8	79.68	80.46	75.64	3,184.67	428.87	4,449.98	23.2	6.2	41.4
Calcium Cyanamide	472,809.88	377,444.11	197,589.77	56.4	60.8	26.3	100.18	106.63	94.97	4,719.37	3,539.65	2,080.63	34.4	51.0	19.4
Sodium Nitrate	192.60	...	...	...	...	...	65.29	...	...	2.95	...	...	...	...	...
Basic Slag	58.18	...	...	...	...	...	38.79	...	...	1.50	...	...	...	...	...
Superphosphate	7,475.94	3,884.43	3,012.60	0.9	0.6	0.4	40.31	58.41	63.83	185.45	66.50	47.20	1.4	1.0	0.4
Limestone	63,714.93	23,073.30	41,774.21	7.6	3.7	5.6	12.01	16.64	15.66	5,304.22	1,386.82	2,668.25	38.7	20.0	24.9
Potassium Sulphate	...	222.20	...	...	...	...	...	55.55	...	...	4.00	...	...	...	...
Rock Phosphate	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ammonium Chloride	40,150.25	181,560.23	170,916.49	4.8	29.3	22.7	128.80	120.37	115.58	311.72	1,508.34	1,478.75	2.3	21.8	13.8
Ammonium Nitrate	...	106.42	1,285.30	...	...	0.2	...	147.81	92.27	...	.72	13.93	...	...	0.1
Miscellaneous	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
TOTAL	838,124.14	620,796.10	751,196.44	100.0	100.0	100.0	...	...	...	13,709.88	6,934.90	10,738.74	100.0	100.0	100.0

REPORT ON THE SUGAR EXPERIMENT STATIONS FOR THE YEAR 1944.

STAFF.

C. H. B. WILLIAMS, M.A., A.I.C.T.A., DIP. AGR.	*Sugar Agronomist and Plant Breeder.*
C. CAMERON	*Field Manager.*
G. R. DIAS	*Field Assistant.*
C. A. BANNISTER	*Field Assistant.*
H. B. SINGH	*Laboratory Assistant.*
H. W. YHAP	*Statistical Assistant.*
G. E. STOLL	*Statistical Assistant.*
C. A. V. SMITH	*Statistical Assistant.*

2. Mr. Yhap resigned on the 4th March to take up a clerical appointment with Government.

3. Mr. Bannister was appointed Second Field Assistant as from 1st January.

4. Mr. Stoll was appointed to the vacant post of Statistical Assistant and resigned on the 16th June to join the Royal Air Force. He was succeeded on July 1st by Mr. Smith.

5. Mr. Williams left the Colony on August 18th on three months vacation and six weeks duty leave. He did not return until January 20th but although this infringes on the year 1945 the entire period is shown below along with other absences of the Staff from duty during 1944.

	Duty Leave.	*Casual Leave.*	*Sick Leave.*	*Vacation Leave.*
Mr. Williams	5. xii.—20. i.	—	—	4. ix.—4. xii.
Mr. Cameron	—	11. iv.—11. v.	21—24. ii. and 8—12. xi.	—
Mr. Dias	—	13—18. i.	29. xi.—1. xii.	12. vi.—11. viii. and 4—31. xii.
Mr. Singh	—	27—29. ix. and 2—5. x.	10—20. x. and 18—22. xii.	—
Mr. Yhap	—	—	4—6. ii.	—
Mr. Smith	—	—	14—16. xi.	—

COMMITTEE.

6. The following members formed the British Guiana Sugar Experiment Stations' Committee for the year :—

THE DIRECTOR OF AGRICULTURE	*Chairman.*
MR. J. C. GIBSON	*Messrs. Booker Bros., McConnell & Co., Ltd.*
HON. M. B. G. AUSTIN, O.B.E.	*Messrs. Curtis, Campbell & Co., Ltd.*
MR. G. M. ECCLES	*Messrs. S. Davson & Co., Ltd.*
MR. G. H. HOLDEN	*Messrs. Sandbach, Parker & Co., Ltd.*
MR. C. H. PALMER	*Messrs. Booker Bros., McConnell & Co., Ltd.*
MR. R. F. MILNE	*Messrs. Booker Bros., McConnell & Co., Ltd.*

FINANCE.

7. The sum of $28,656.00 was voted from the funds of the Sugar Experiment Stations' Committee for the working of the Station during the year. The total spent was $26,040.60 leaving an unexpended balance of $2,615.40. The saving may be attributed to a shortage of labour, which prevented certain operations being carried out, and to the fact that the motor truck could not be worked during the year.

8. Receipts from Assessments during the year amounted to $20,550.00, those from sale of canes to $5,053.26, and miscellaneous receipts to $175.70.

9. In addition to the amount spent from the funds of the Committee, $746.35 was expended from a special grant made for fertilizer research by the Chilean Nitrate Corporation. This sum, together with those spent in previous years, brings the total spent from this source, to date, to $2,623.86.

EQUIPMENT.

10. As in the year before, no major repairs or additions were made during 1944. This strict economy, which has been in operation for some years now, is having a deleterious effect on buildings, etc., and a fair amount of work will have to be done in the near future.

CANE BREEDING AND INTRODUCTION.

11. Table I lists, under their year of production, the number of Demerara seedlings in field experiments and those under multiplication and selection.

TABLE I.—**Demerara Seedlings in Tests and Undergoing Multiplication, etc., December, 1944.**

Year.	Number of Seedlings.	
	In Test.	Under Multiplication, etc.
1933	1	—
1934	2	—
1936	2	—
1937	1	—
1938	5	—
1939	2	—
1940	25	—
1941	59	51
1942	—	17
1943	—	71
Total	97	139

12. At the time of writing the 1944 Seedlings are being transplanted to the field. Owing to war conditions and labour shortage, all the transplanting will be done to frontland clay at Sophia.

13. *The 1943 seedlings* have been subjected to their first selection and 71 have been extended on frontland clay at Sophia. As recorded in the last Annual Report, labour shortages and frequent staff changes handicapped the 1943 breeding programme. In consequence, only 6,463 seedlings of this batch had been transplanted to the field. However, the percentage of selectable seedlings was satisfactory, and it will be observed, from Table II, that crosses involving Glagah, Chunnee and Noble combinations, and one intergeneric back-cross, involving Sorghum, were particularly fruitful.

TABLE II.—Crosses Attempted, Seedlings Selected, etc., 1943.

Combinations.	No. of Arrows Used.	No. of Boxes Sown.	No. of Seedlings Basketed.	No. of Seedlings Planted in Field.	1st Selection.	
					No.	%
I. Interspecific Crosses.						
2. 5th Nobilized Glagah:—						
Co. 421 x Diamond 10	3	4	137	60	—	—
D. 204/36 x „	2	4	197	135	—	—
D. 17/40 x „	1	2	—	—	—	—
Total	6	10	334	195	—	—
3. 6th Nobilized Glagah:—						
D. 25/38 x Diamond 10	3	4	306	240	—	—
D. 27/38 x „	3	4	230	180	—	—
D. 4/40 x „	1	1	172	105	1	.95
D. 6/40 x „	2	1	18	15	—	—
D. 8/40 x „	1	1	68	60	—	—
D. 11/40 x „	1	1	—	—	—	—
D. 12/40 x „	2	2	—	—	—	—
Total	13	14	794	600	1	.17
4. Glagah, Chunnee and Noble Combinations.						
B. 34104 x Diamond 10	2	4	2	—	—	—
„ x Co. 421	3	8	15	15	1	6.67
Co. 281 x Diamond 10	2	2	35	15	—	—
„ x Co. 421	2	3	17	15	—	—
„ x D. 200/36	2	3	141	105	5	4.76
Co. 331 x Diamond 10	4	5	1836	1290	5	.39
Co. 421 x Co. 290	4	5	310	255	10	3.92
„ x Co. 419	16	12	2254	1860	—	—
„ x Co. 331	4	2	781	510	11	2.16
D. 14/33 x Diamond 10	1	3	103	60	—	—
„ x D. 200/36	1	2	123	90	12	13.33
D. 14/34 x „	1	2	39	30	2	6.67
„ x Co. 421	1	1	13	13	1	7.69
„ x Diamond 10	3	2	96	45	—	—
D. 200/36 x Co. 421	2	3	183	105	2	1.90
„ x Diamond 10	4	5	221	165	8	4.85
D. 54/38 x „	2	3	11	—	—	—
D. 2/40 x „	2	3	75	60	—	—
Total	56	68	6255	4633	57	1.23

TABLE II. (Contd.).—**Crosses Attempted, Seedlings Selected, etc., 1943.**

Combinations.	No. of Arrows Used.	No. of Boxes Sown.	No. of Seedlings Basketed.	No. of Seedlings Planted in Field.	1st Selection.	
					No.	%
II. Intergeneric Crosses.						
2. First Back Crosses.						
Co. 421 x D. 166/34	2	4	700	660	13	1.97
D. 14/40 x Diamond 10	1	1	19	15	—	—
D. 166/34 x Co. 421	2	4	849	360	—	—
Total	5	9	1568	1035	13	1.26
Grand Total	80	101	8,951	6,463	71	1.10

14. Cane varieties imported during the year through the Central Plant Quarantine Station, I.C.T.A., Trinidad, B.W.I., were B. 4110 and B. 41211.

EXPERIMENTS.

15. In Sugar Bulletin No. 13 the experiments reaped during the year have been fully reported, and they will not be discussed here. At the end of the year there were 36 variety, 21 manurial and 7 cultivation experiments in progress.

MISCELLANEOUS.

16. Table III gives statistics, for recent years, as to seedlings bred, field experiments started and reaped, cane cuttings distributed, cane samples analysed, etc.

17. Owing to war conditions, no Field Days were held during the year under review.

18. Meetings of the B.G. Sugar Experiment Stations' Committee were held on the 5th June, 9th August, 31st October and 5th December, 1944.

19. Three cuttings each of D. 14/34 and D. 166/34 were shipped to Belem, Para.